

CLAIMS

What is claimed is:

1. A method of macro control of streaming digital content, the method implemented in conjunction with a networked system of computers including a content server through which digital content is transcoded into streams of multimedia data, the streams communicated via network to client devices, the digital content selected for inclusion in streams in dependence upon remote director instructions, the remote director instructions comprising hyperlinked URLs invoked through a network-capable device, the remote director instructions further comprising for each URL in a remote director instruction a computer program that is executed when the URL is invoked, the method comprising the steps of:

recording in non-volatile, machine-readable storage, the digital content.

storing in computer memory macros, each macro comprising a URL and a first time, the URL being a hyperlinked URL component of a remote director instruction, the first time being the time when the URL was first invoked through a hyperlink as part of a remote director instruction for control of streaming digital content, the macros being stored in the order in which the URLs are first invoked through hyperlinks;

reading from computer memory the macros in the order in which the macros were stored;

invoking each URL of each macro as a hyperlink at a second time, the second time being dependent upon the first time, invoking each URL further comprising formulating and issuing a remote director instruction;

retrieving from the non-volatile, machine-readable storage, transcoding, selecting for inclusion in output streams, and communicating to client devices, in dependence upon remote director instructions, the digital content.

2. The method of claim 1 wherein recording the digital content further comprises recording approximately the original raw form of the digital content.
3. The method of claim 1 wherein issuing a remote director instruction further comprises executing upon a content server through a Java servlet within the content server computer programs identified by the URLs.
4. The method of claim 3 wherein the computer programs comprise Java thread-level URL dispatch routines.
5. The method of claim 1 wherein the transcoding, selecting for inclusion in output streams, and communicating to client devices are all carried out in dependence upon user preferences, user demographics, and client device attributes.
6. The method of claim 1 wherein the transcoding, selecting for inclusion in output streams, and communicating to client devices are all carried out in dependence upon current real time remote director instructions received from a director coupled to the content server through a servlet within the content server.

7. A method of macro control of streaming digital content, the method implemented in conjunction with a system that provides streaming digital content from a multiplicity of sources of digital content to a multiplicity of client devices, the system including a content server through which digital content is transcoded into output streams, the output streams communicated via network to client devices, the digital content selected for inclusion in output streams in dependence upon remote director instructions, the remote director instructions comprising hyperlinked URLs invoked through a network-capable device, the remote director instructions further comprising for each URL in an instruction a computer program that is executed when the URL is invoked, the method comprising the steps of:

establishing a first start time for an event, the event comprising a multiplicity of sources of digital content, the event having a duration;

recording in non-volatile, machine-readable storage, the digital content.

storing in computer memory, during the duration of the event, macros, each macro comprising a URL and a first elapsed time, the URL being a hyperlinked URL component of a remote director instruction, the first elapsed time being the elapsed time after the first start time when the URL was first invoked through a hyperlink as part of a remote director instruction for control of streaming digital content, the macros being stored in the order in which the URLs are first invoked through hyperlinks;

establishing a second start time for retransmitting the event;

reading from computer memory the macros in the order in which the macros were stored;

invoking each URL of each macro as a hyperlink at a second elapsed time after the second start time, the second elapsed time being approximately equal to the first elapsed time of the macro, invoking each URL further comprising issuing a remote director instruction;

retrieving from the non-volatile, machine-readable storage, transcoding, selecting for inclusion in output streams, and communicating to client devices, in dependence upon remote director instructions, the digital content;

whereby is effected a retransmission of an event.

8. The method of claim 2 further comprising the steps of:

registering a user for a retransmission of an event, the retransmission of an event identified by an event identification code, the retransmission of an event comprising at least one video stream, at least one source, a start date and a start time;

logging in the user for the retransmission of an event, logging in the user further comprising assigning values to user login attributes, the user login attributes comprising user identification, device type, network address, and a tier;

assigning a tier value in dependence upon the device type and the event identification code;

wherein the selections are dependent upon the tier;

wherein transcoding further comprises transcoding in dependence upon the tier;
and

wherein communicating to at least one of the client devices the output video stream further comprises communicating the output video stream to the network address.

9. The method of claim 5 wherein:

registering a user further comprises creating an event registration record comprising event registration attributes comprising user id, event id, event subscription level, start date, and start time; and

assigning a tier value further comprises assigning a tier value in dependence upon the event subscription level.

10. A system for macro control of streaming digital content, the system implemented in conjunction with a computer network including a content server through which digital content is transcoded into streams of multimedia data, the streams communicated via network to client devices, the digital content selected for inclusion in streams in dependence upon remote director instructions, the remote director instructions comprising hyperlinked URLs invoked through a network-capable device, the remote director instructions further comprising for each URL in a remote director instruction a computer program that is executed when the URL is invoked, the system comprising:

means for recording in non-volatile, machine-readable storage, the digital content.

means for storing in computer memory macros, each macro comprising a URL and a first time, the URL being a hyperlinked URL component of a remote director instruction, the first time being the time when the URL was first invoked through a hyperlink as part of a remote director instruction for control of streaming digital content, the macros being stored in the order in which the URLs are first invoked through hyperlinks;

means for reading from computer memory the macros in the order in which the macros were stored;

means for invoking each URL of each macro as a hyperlink at a second time, the second time being dependent upon the first time, means for invoking each URL further comprising means for formulating and means for issuing a remote director

instruction;

means for retrieving from the non-volatile, machine-readable storage, means for transcoding, means for selecting for inclusion in output streams, and means for communicating to client devices, in dependence upon remote director instructions, the digital content.

11. The system of claim 10 wherein means for recording the digital content further comprises means for recording approximately the original raw form of the digital content.
12. The system of claim 10 wherein means for issuing a remote director instruction further comprises means for executing upon a content server through a Java servlet within the content server computer programs identified by the URLs.
13. The system of claim 12 wherein the computer programs comprise Java thread-level URL dispatch routines.
14. The system of claim 10 wherein the means for transcoding, means for selecting for inclusion in output streams, and means for communicating to client devices are all implemented in dependence upon user preferences, user demographics, and client device attributes.
15. The system of claim 10 wherein the means for transcoding, means for selecting for inclusion in output streams, and means for communicating to client devices are all implemented in dependence upon current real time remote director instructions received from a director coupled to the content server through a servlet within the

content server.

16. A system for macro control of streaming digital content, the system implemented in conjunction with a content server that provides streaming digital content from a multiplicity of sources of digital content to a multiplicity of client devices, the digital content transcoded into output streams, the output streams communicated via network to client devices, the digital content selected for inclusion in output streams in dependence upon remote director instructions, the remote director instructions comprising hyperlinked URLs invoked through a network-capable device, the remote director instructions further comprising for each URL in an instruction a computer program that is executed when the URL is invoked, the system comprising:

means for establishing a first start time for an event, the event comprising a multiplicity of sources of digital content, the event having a duration;

means for recording in non-volatile, machine-readable storage, the digital content;

means for storing in computer memory, during the duration of the event, macros, each macro comprising a URL and a first elapsed time, the URL being a hyperlinked URL component of a remote director instruction, the first elapsed time being the elapsed time after the first start time when the URL was first invoked through a hyperlink as part of a remote director instruction for control of streaming digital content, the macros being stored in the order in which the URLs are first invoked through hyperlinks;

means for establishing a second start time for retransmitting the event;

means for reading from computer memory the macros in the order in which the macros were stored;

means for invoking each URL of each macro as a hyperlink at a second elapsed time after the second start time, the second elapsed time being approximately equal to the first elapsed time of the macro, means for invoking each URL further comprising means for issuing a remote director instruction;

means for retrieving from the non-volatile, machine-readable storage, means for transcoding, means for selecting for inclusion in output streams, and means for communicating to client devices, in dependence upon remote director instructions, the digital content.

17. The system of claim 16 further comprising:

means for registering a user for a retransmission of an event, the retransmission of an event identified by an event identification code, the retransmission of an event comprising at least one video stream, at least one source, a start date and a start time;

means for logging in a user for the retransmission of an event, means for logging in a user further comprising means for assigning values to user login attributes, the user login attributes comprising user identification, device type, network address, and a tier;

means for assigning a tier value in dependence upon the device type and the

event identification code;

wherein the selections are dependent upon the tier;

wherein means for transcoding further comprises means for transcoding in dependence upon the tier; and

wherein means for communicating to at least one of the client devices the output video stream further comprises means for communicating the output video stream to the network address.

18. The system of claim 17 wherein:

means for registering a user further comprises means for creating an event registration record comprising event registration attributes including comprising user identification, event identification, event subscription level, start date, and start time; and

means for assigning a tier value further comprises means for assigning a tier value in dependence upon the event subscription level.

19. A computer program product for macro control of streaming digital content, the computer program product implemented in conjunction with a computer network including a content server through which digital content is transcoded into streams of multimedia data, the streams communicated via network to client devices, the digital content selected for inclusion in streams in dependence upon remote director instructions, the remote director instructions comprising hyperlinked URLs invoked through a network-capable device, the remote director instructions further comprising for each URL in a remote director instruction a computer program that is executed when the URL is invoked, the computer program product comprising:

a recording medium;

means, recorded upon the recording medium, for recording in non-volatile, machine-readable storage, the digital content.

means, recorded upon the recording medium, for storing in computer memory macros, each macro comprising a URL and a first time, the URL being a hyperlinked URL component of a remote director instruction, the first time being the time when the URL was first invoked through a hyperlink as part of a remote director instruction for control of streaming digital content, the macros being stored in the order in which the URLs are first invoked through hyperlinks;

means, recorded upon the recording medium, for reading from computer memory the macros in the order in which the macros were stored;

means, recorded upon the recording medium, for invoking each URL of each macro as a hyperlink at a second time, the second time being dependent upon the first time, means for invoking each URL further comprising means for formulating and means for issuing a remote director instruction;

means, recorded upon the recording medium, for retrieving from the non-volatile, machine-readable storage, means for transcoding, means for selecting for inclusion in output streams, and means for communicating to client devices, in dependence upon remote director instructions, the digital content.

20. The computer program product of claim 10 wherein means for recording the digital content further comprises means for recording approximately the original raw form of the digital content.
21. The computer program product of claim 10 wherein means for issuing a remote director instruction further comprises means for executing upon a content server through a Java servlet within the content server computer programs identified by the URLs.
22. The computer program product of claim 12 wherein the computer programs comprise Java thread-level URL dispatch routines.
23. The computer program product of claim 10 wherein the means for transcoding, means for selecting for inclusion in output streams, and means for communicating to client devices are all implemented in dependence upon user preferences, user demographics, and client device attributes.

24. The computer program product of claim 10 wherein the means for transcoding, means for selecting for inclusion in output streams, and means for communicating to client devices are all implemented in dependence upon current real time remote director instructions received from a director coupled to the content server through a servlet within the content server.

25. A computer program product for macro control of streaming digital content, the computer program product implemented in conjunction with a content server that provides streaming digital content from a multiplicity of sources of digital content to a multiplicity of client devices, the digital content transcoded into output streams, the output streams communicated via network to client devices, the digital content selected for inclusion in output streams in dependence upon remote director instructions, the remote director instructions comprising hyperlinked URLs invoked through a network-capable device, the remote director instructions further comprising for each URL in an instruction a computer program that is executed when the URL is invoked, the computer program product comprising:
26. means, recorded upon the recording medium, for establishing a first start time for an event, the event comprising a multiplicity of sources of digital content, the event having a duration;
- means, recorded upon the recording medium, for recording in non-volatile, machine-readable storage, the digital content;
- means, recorded upon the recording medium, for storing in computer memory, during the duration of the event, macros, each macro comprising a URL and a first elapsed time, the URL being a hyperlinked URL component of a remote director instruction, the first elapsed time being the elapsed time after the first start time when the URL was first invoked through a hyperlink as part of a remote director instruction for control of streaming digital content, the macros being stored in the order in which the URLs are first invoked through hyperlinks;

means, recorded upon the recording medium, for establishing a second start time for retransmitting the event;

means, recorded upon the recording medium, for reading from computer memory the macros in the order in which the macros were stored;

means, recorded upon the recording medium, for invoking each URL of each macro as a hyperlink at a second elapsed time after the second start time, the second elapsed time being approximately equal to the first elapsed time of the macro, means for invoking each URL further comprising means for issuing a remote director instruction;

means, recorded upon the recording medium, for retrieving from the non-volatile, machine-readable storage, means for transcoding, means for selecting for inclusion in output streams, and means for communicating to client devices, in dependence upon remote director instructions, the digital content.

27. The computer program product of claim 16 further comprising:

means, recorded upon the recording medium, for registering a user for a retransmission of an event, the retransmission of an event identified by an event identification code, the retransmission of an event comprising at least one video stream, at least one source, a start date and a start time;

means, recorded upon the recording medium, for logging in a user for the retransmission of an event, means for logging in a user further comprising means for assigning values to user login attributes, the user login attributes comprising user identification, device type, network address, and a tier;

means, recorded upon the recording medium, for assigning a tier value in dependence upon the device type and the event identification code;

wherein the selections are dependent upon the tier;

wherein means for transcoding further comprises means for transcoding in dependence upon the tier; and

wherein means for communicating to at least one of the client devices the output video stream further comprises means for communicating the output video stream to the network address.

28. The computer program product of claim 17 wherein:

means for registering a user further comprises means for creating an event registration record comprising event registration attributes including comprising user identification, event identification, event subscription level, start date, and start time; and

means for assigning a tier value further comprises means for assigning a tier value in dependence upon the event subscription level.

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